

## Resource Management Consultants

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TOXICOLOGY DOCUMENT STAND  
Richardson Flat  
USFWS Comments on SAP  
12/10/01

**RE: Response to USFWS comments on October 24, 2000 Draft Sampling and Analysis Plan (SAP) for Richardson Flat RI/FS (Site ID #UT98052840).**

February 2, 2001

Dear Mr. Harris:

Resource Management Consultants (RMC) on behalf of United Park City Mines is providing a response to USFWS comments regarding the October 24, 2000 Draft Sampling and Analysis Plan (SAP) for the Richardson Flat RI/FS. A response to each comment precedes the original comment provided by the USFWS. RMC has included the original USFWS comments for clarity.

### General Comments

It is important that ecological considerations be brought forward within an ecological assessment as part of the Remedial Investigation/Feasibility Study process, which includes scoping and work plan development. The Service noted that the previously submitted *Statement of Work for the Focused Remedial Investigation/Feasibility Study* (RI/FS) for the Richardson Flat Tailings Site, which included the RI/FS Work Plan, contained a discussion of additional data needs for site characterization. The RI/FS Statement of Work stated that the additional information gathered will assist to better define potential Applicable or Relevant and Appropriate Regulations (ARARs). Additional biological, geological, chemical, and hydrological data collection is also necessary in order to identify potential damages to ecological resources, conduct an ecological risk assessment, and evaluate remediation criteria to protect vulnerable natural resources. These data needs should be addressed as an important objective of the Sampling and Analysis Plan (SAP) in order to characterize effects, sources, and exposure and develop models that are to be used to relate these measures to each other and provide an estimate of risk.

- UPCM recognizes the need for additional ecological data and is cooperatively working with EPA's ecological risk assessor to determine the scope of additional data collection for ecological risk analyses. Additional planning by all stakeholders is needed before data needs can be specified.

### Specific Comments

Page 10, second paragraph: It is stated that the silt and clay layer overlying the upper aquifer



presents a significant barrier to vertical migration of water from the tailings site. Has lateral migration been investigated in this aquifer?

- Lateral migration data for the shallow aquifer will be compiled from existing data and additional shallow groundwater data will be collected as part of the sample collection activities. A supplemental hydrogeological study will be submitted in the RI report.

Page 11, Section 2.2.1.3: The report states that there is very little transfer of metals in the sediments to the water. Have leaching tests (e.g., Toxicity Characteristic Leaching Procedure) been conducted on these sediments?

- No tests have been performed, however, based on the metal concentrations in the sediment as compared to metal concentrations in the water it is clear that only a small portion of metal is released from the sediment. Furthermore, it is likely that metals in the sediment are bound up in an organic/metal complex or sulfide/metal complex resulting in reduced solubility and/or bioavailability.

The TCLP test is used to characterize wastes prior to disposal. Results of the test are used to determine what type of disposal facility can accept the wastes. The TCLP is not appropriate to determine leaching rates in the environment. Leaching tests may be performed, in the future, if the ecological risk assessment requires this data.

Page 12, last paragraph: Wetland sediments that are rich in organic carbon are said to be binding the metals and therefore not allowing significant mobilization and release of metals to the environment. Similar to the above comment, has leach testing or sediment characterization been completed for these sediments?

- See response to previous comment 11.

Page 16, Section 3.1.1: Surface water sample locations, as shown in Figure 4.0, do not appear to include the pond area located on the west side of the study area. This area likely provides refugia for wetland-dependent birds as well as other aquatic vertebrates. Please clarify the rationale for excluding this location for both surface water and sediment sampling. In addition, is sampling site RT- 12 considered a “background” or “reference” sampling point?

- Sampling is not planned specifically for the pond. Water quality samples are collected both upstream and downstream of the pond in the diversion ditch, which flows into the pond. Additional samples in the pond itself will add little if any information. Groundwater samples will be collected from RT-12 which will be placed downgradient of the impoundment area to assess the impacts of the impoundment area on Silver Creek water quality.

Page 17, Section 3.1.2: It is unclear from Figure 4.0 as to where the two monitoring wells are located. Please provide monitoring well number in text and reference this number in Figure 4.0.

- Two monitoring wells, RT-11 and RT-12 are located upstream and downstream of the tailings impoundment. RT-11 and RT-12 are shown on Figure 4.0. Monitoring well installation is detailed in Section 3.1.2. In addition, two piezometers, RT-13 and RT-14 have



been added to Figure 4.0. Piezometer installation is detailed in Section 3.1.5.1.

Page 18, Section 3.1.3: It is stated that EPA will use collected soil data in the risk assessment process to evaluate the potential for impacts to human health and the environment. The RI/FS Statement of Work provided only a preliminary site model for this site and stated that a conceptual site model will be developed in coordination with a toxicologist from EPA using information presented in the preliminary site model. The Service believes that ecological conceptual models will need to be developed for this site in order to provide a complete ecological assessment of this site. Soil, surface and ground water, and biotic pathways should be included in the conceptual models that are to be developed with the site characterization information collected during the sampling/analysis process.

- A preliminary conceptual site model (CSM) has been developed for the site. Figure 8a and Figure 8b details the conceptual site model in a graphical format. Section 2.2.4 describes the conceptual site model. Additional details of the CSM will be developed later with guidance from the Biological Technical Assistance Group (BTAG).

Page 18, first paragraph: Soil samples are to be collected at the surface to characterize the cover material for potential risk to humans from exposure to contaminated soils. However, the end of this paragraph states that the surface sample data will be used by EPA to determine if the cover material presents a threat to human health or the environment. Action levels provided (*i.e.*, lead at 500 ppm and arsenic at 250 ppm) are screening levels for human health risks. The Service believes that sampling should be collected with the intent to provide appropriate information to evaluate risks to wildlife resources. Northern sage grouse, which use this site as winter cover, should be considered as a potential ecological receptor in an ecological assessment. Effect levels for this species and other wildlife are likely to be significantly lower than human health action levels.

- The arsenic and lead screening levels will no longer be used. The SAP currently states all soil samples will be analyzed for lead and arsenic, and 20% will be analyzed for RCRA metals including copper and zinc. This will provide a data base useful for evaluating potential ecological risk.

Page 18, first paragraph: It is stated that the thickness of the soil cover will be determined by excavating by various techniques down to the soil/tailings interface. Please clarify the extent of this excavation on the site. Are all 43 locations to be excavated by invasive techniques or by hand? The timing and extent of this sampling may be important relative to disturbance to migratory and resident bird use. We recommend that disturbance factors be evaluated for this sampling effort.

- The onsite soils cover sampling detailed in the SAP will use a variety of techniques to collect soil samples. Sampling techniques will be dependent on site conditions encountered during sampling. The least invasive technique possible will be used at each location. To preserve the integrity of the site cover, disturbance will be kept to a minimum. RMC request that the USFWS provide guidance on specific disturbance factors for site specific migratory and resident birds.

Page 18, second paragraph: We recommend that you add "Off-site sampling..." to the beginning of



this paragraph in order to clarify in the text that these sample locations are off-site, as indicated in Figure 6.0. In addition, it would be helpful to state in this paragraph what type of constituents are to be evaluated in these samples.

- Section 3.1.3.1 was added to detail the off-site sampling activities.

Page 19, Section 3.1.4: As stated above, in reference to soil sampling, sediment samples should be collected so that they provide information relevant to exposure pathways, and therefore are useful to the ecological risk assessment process.

- Section 3.1.4 states that sufficient sample will be collected for additional testing if desired. Samples will be archived until the initial round of results are obtained.

Page 19, Section 3.1.5: Spelling correction “long-term” (first sentence).

- The spelling has been corrected.

Page 19, Section 3.1.5: The Service recommends that the sampling technique (as discussed in Section 3.2.3.2) be summarized here, or at least provide reference to the exact section of the report, rather than referring the reader to general sections of the report.

- Sampling methodologies have been expanded in this section.

Page 20, top of page: Please clarify the sentence which states that samples are to be collected either by excavating a test pit with a backhoe or with direct push methods.

- Both test pit and direct push sampling methods are planned.

Page 20, Section 3.1.5.1: Please clarify the sampling technique to be used in the subsurface sampling or refer the reader to the appropriate methodology section.

- The subsurface sampling techniques for the delineation of tailings south of the diversion ditch are specified in the second paragraph of Section 3.1.5.1.

Page 20, second paragraph: Please specify the location of sampling points for the subsurface sampling. Are these the locations shown in Figure 5.0?

- The sampling points for the delineation of tailings south of the diversion ditch will be determined in the field after aerial photograph review and field reconnaissance have been performed.

Page 20, last paragraph: It is stated that monitoring wells will be installed if groundwater is present in the tailings south of the diversion ditch. How will the location and number of wells to be installed in this area be determined?

- Two piezometers will be placed south of the diversion ditch. The piezometers are labeled RT-13 and RT-14 on Figure 4.0.



Page 21, general comment to Section 3.0: The Service recommends that additional sampling and analysis for biota be considered for this site in order to provide more complete information to evaluate potential impacts to ecological receptors. Vegetation (*e.g.*, sage brush) and aquatic/terrestrial insects appear to be an important dietary component for wildlife receptors at this site and should be considered. Colocation, both in space and time, of soil and plant samples will allow ecological assessors to model the relationship between soil and plant concentrations.

- If the BTAG determines plant sampling is appropriate, the sampling plan will be revised later to include plant sampling according to specific identified needs.

Page 23, Section 3.2.3.1: Please clarify whether the soil samples are to be sieved and, if so, what sieve size(s) are to be used.

- Section 3.2.3 details the methodologies for soil sample collection. Soil samples will not be sieved to <250 microns since human health risk is expected to be low.

Page 24, Section 3.2.4: The Service recommends that clarification be provided in this section as to whether sediment samples collected will be discrete and/or composite samples.

- Section 3.2.4 specifies that sediment samples will be collected as discrete samples.

Page 24, Section 3.3: Please clarify as to whether evidence tape is to be used to secure samples as part of the sample handling protocols.

- Custody seals are specified in RMC's Standard Operating Procedures located in Appendix B.

RMC appreciates the comments provided by the Service. All comments provided by the Service have been responded to in this letter.

Sincerely,

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President  
Resource Management Consultants

cc: Kerry Gee, United Park City Mines

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